

A. GENERAL

1. **Applicable codes.** All projects shall comply with the following referenced codes:
- a. 2013 California Electric Code (CEC)
 - b. 2013 California Building Code (CBC) and/or 2013 California Residential Code (CRC)
 - c. 2013 California Plumbing Code (CBC)
 - d. 2013 California Mechanical Code (CMC)
 - e. County of San Diego Consolidated Fire Code

B. ROOF

1. **Roofing and weatherproofing.** All roofing and weatherproofing installation shall comply with the following methods and requirements:
- a. Any arrays integrated with the roofing material shall be Class “A” rated in accordance with ASTM E 108 or UL 790. (County of San Diego Building Code 92.1.1505.1, CBC 1505.8, CRC 902.3)
 - b. All roof penetrations shall be secure and weather-tight. (CRC 903..2)
 - c. Module installations shall not cover or block any roof plumbing or mechanical vent locations. (CPC 904, CPC 906, CMC 802.6, CMC 510.8)
2. **Firefighter access requirements.** All roof-mounted solar photovoltaic systems shall comply with the following:
- a. Roof access points shall be provided per the following and in conformance with CRC R331.4.1 or CBC 3111.4.1 as applicable:
 - 1. Located in areas not requiring placement of ground ladders over openings such as doors or windows.
 - 2. Located at strong points of building construction in locations where access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.
3. **Inspector access requirements.** A portable ladder complying with CAL-OSHA requirements shall be made available and secured in place for inspection.

C. ELECTRICAL

1. **Wiring methods.** All wiring installation shall comply with the following wiring methods and requirements:
- a. Corrosion resistant conduit shall be used for all underground runs and installations. (CEC 690)
 - b. All exposed wiring shall be listed as sunlight resistant and all outdoor equipment shall be NEMA 3R rated. (CEC 690.31, CEC 310.8)
 - c. Photovoltaic DC conductors entering the building shall be installed in a metallic raceway. (CEC 690.31)
 - d. Markings shall be placed on interior and exterior DC conduit, raceway, enclosures, and cable assemblies every 10 feet -- and within 1 foot of turns or bends and within 1 foot above and below penetrations of roof/ceiling assemblies, walls, or barriers -- with minimum 3/8-inch-high white lettering on red background reading: “WARNING: PHOTOVOLTAIC POWER SOURCE.” (CEC 690.31)
 - e. DC breakers shall be listed and rated for PV use. (CEC 705.12)
 - f. All equipment shall be identified on a warning placard clearly showing the location of all pertinent equipment and disconnects. Alternate power source placard shall meet the specifications of the San Diego Area Newsletter. The placard shall be metal or plastic, with engraved letters in a contrasting color to the placard, include the location of meter, disconnects, inverter, the array, and a footprint of the entire building and site. The placard will be attached by pop-rivets, screws, or other approved fasteners. Refer to the sample placard for alternative power source (diagram on the right) for further requirements. (CEC 110)

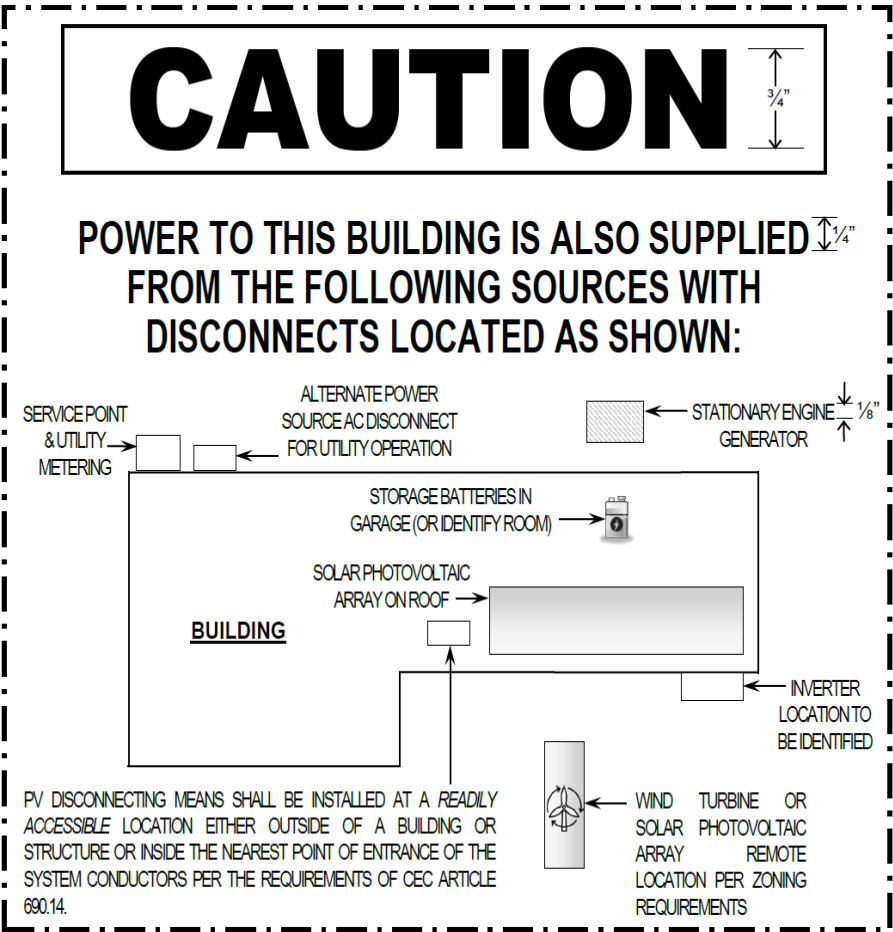
- g. PV connection in panel board shall be positioned at the opposite (load) end from the input feeder location or main circuit location. (CEC 705.12)
 - h. If approved plans show de-rating of the main breaker, a placard label is required at the panel stating: “THIS PANEL HAS BEEN DE-RATED TO (insert amperage size). DO NOT INSTALL LARGER BREAKERS.” Refer to the sample placard for alternative power source (diagram on the right) for further requirements. (CEC 690.53, CEC 690.17, CEC 705.10)
 - i. Wire sizing and terminations shall be in conformance with the sixty degree (60°) column of CEC Table 310.15(B)(16).
 - j. All exterior conduit placement and sizing shall have ambient temperature adjustments in conformance with the ASHRAE designated design temperate and comply with CEC 310.15(b)(3)(c).
 - k. Main service panel and buss bar ratings must be verifiable at time of inspection with fixed labeling.
 - l. Integrated and or micro-inverter systems shall have a rooftop AC disconnect and comply with CEC 690.14 (D) (1) and CEC 690.14 (D) (2).
2. **Grounding methods.** All grounding installation shall comply with the following grounding methods and requirements:
- a. All modules shall be grounded in accordance with the CEC and the manufacturer’s installation instructions. Approved plans and all reference documents shall be available on site for inspection verification. (CEC 250)
 - b. Third-party grounding devices must be specifically mentioned in the module manufacturer’s installation instructions by device make and model. These installation instructions must be reviewed by the module listing agency as part of the listing of the module to UL 1703. Grounding devices listed to UL 2703 also may be acceptable if the device installation instructions mention the specific module make and model.
 - c. Unless specified by the manufacturer, all inverters (including micro-inverters) shall have a grounding electrode conductor with a minimum size of #8 copper wires. (CEC 690.47)
 - d. Electric service panels shall be grounded with a grounding electrode(s) that complies with CEC Article 250. Ground-rods shall be supplemented by a second ground-rod installed at least 6 feet apart. (CEC 690.47)
 - e. If the existing main service panel does not have verifiable grounding electrode, it shall be the contractor’s responsibility to install a supplemental grounding electrode. Service grounding electrode must be verified at the time of inspection for all buildings. Buildings with a metallic water pipe system as the sole grounding electrode shall have a supplemental electrode installed. (CEC 690.47)
 - f. All combiner boxes shall be listed for DC current and listed by a nationally recognized testing agency. (CEC 690.47)
 - g. Manufacturer’s technical cut sheets and installation manuals for all equipment and components shall be provided on site.
 - h. All terminals of the disconnecting means may be energized in the open position in conformance with CEC 690.17.
 - i. All electrical terminus torqueing shall be in accordance with the CEC, San Diego Area News Letter, and the manufacturer’s installation instructions. (CEC 110.3 (B), CEC 110.14)

D. MISCELLANEOUS

1. **Zoning requirements.** All roof-mounted solar photovoltaic systems shall comply with:
- a. County of San Diego zoning requirements per setbacks for Solar Photovoltaic Panels. Reference handout PDS#276 for further details.
2. **Manufactured or mobile home requirements.** All roof-mounted solar photovoltaic installations on manufactured or mobile homes require a permit from the State of California Department of Housing and Community Development (HCD). Contact HCD at (951) 782-4420 for further information.

SAMPLE PLACARD FOR ALTERNATE POWER SOURCE

This is a sample placard required when there is an alternate source of power connected to the premises wiring system. Specify the type of generation, such as stationary engine generator, solar photovoltaic (PV) array, wind turbine, batteries, fuel cell, etc. The placard must be metal or plastic, with engraved letters in a contrasting color, and must include the location of the service point, utility meter, AC and DC disconnects, inverter, and PV array, generator, or other type of generation source, and a footprint of the entire building and site. The placard shall be attached to the service disconnect with pop-rivets, machine screws, or other fasteners as approved by the County of San Diego, Building Division. *Epoxy is not an acceptable method of securing the placard.*



THESE ARE MINIMUM REQUIREMENTS AND SHALL NOT SUPERSEDE MORE RESTRICTIVE SPECIFICATIONS ON THE PLANS OR AS REQUIRED BY APPLICABLE CODE.

BUILDING RECORD ID:

OWNER OR CONTRACTOR SIGNATURE:

County of San Diego, Planning & Development Services
SOLAR PV MINIMUM CONSTRUCTION SPECIFICATIONS
BUILDING DIVISION



Sheet Number

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